DIVISION OF OIL, GAS AND MINING
UNDERGROUND INJECTION CONTROL PROGRAM

PERMIT
STATEMENT OF BASIS

Applicant: Westwater Farms, LLC **Well:** Harley Dome #1

Location: T19S, R21E, S10, Grand County, Utah **API:** 4301931622

Ownership Issues:

The well is located on private surface and mineral lands owned by the operator. The operator's agent has provided the Division an Affidavit of Mailing specifying that a copy of the application for a Class II Injection Well permit was sent to all operators, owners and surface owners within a half-mile of the proposed injection well.

Well Integrity:

Description of the Casings and Cement:

CASING PROGRAM

String Type	Hole Size	Depth	Feet	Casing Diameter	Weight	Grade	Connection Type
Surface	11	224'	?	8 5/8"	24#	J-55	?
Production	7 7/8	1,730	?	5 1/2 "	15.5#	J-55	?

CEMENT PROGRAM

String Type	DV Depth	Stage Lead/Tail	Cement Bottom	Cement Top	Number Sacks	Cement Type	Cement Yield	Cement Weight PPG
Surface	-	-	258'	Surface	50	Class A	1.18	15.6
Production	1,227'	Lead	-	96 CBL	210	Class G	?	12.8

Ground Water Protection:

The operator, Westwater Farms, LLC, proposes to inject a regional composite produced water mixture through perforations into the Wingate Sandstone for the purpose of salt water disposal. The perforations span an interval between 1,342 feet and 1,679 feet of depth. The Division of Oil, Gas and Mining (DOGM) has elected to accept analyses of produced waters from sundry regional field wells as representative of the waters to be injected into this well. These were tested for TDS and the results ranged from about 7,000 to about 15,000 mg/L, a value that is greater than what is considered to be moderately saline (10,000 mg/L). Two different Wingate Sandstone connate water samples were taken on different dates and tested. The TDS values ranged from about 34,000 (near seawater) to about 53,000 mg/L. In either

case, these connate waters are found to be of very low quality, despite being relatively shallow, a circumstance that is not without precedent in Grand County. It is unlikely that a good quality ground water resource is to be found in the Wingate Sandstone in this area. Westwater Farms' consultant, Stewart Environmental, reports that it is probable that the mixture will require anti-scaling treatments from Baker Petrolite. The first water reported during drilling was encountered in the Jurassic-age Morrison Formation at 240' TD (31,000 ppm) according to the Well Completion Report.

The operator asks permission to inject at a UIC Form 1 Maximum Allowable Surface Injection Pressure of 260 psig. This injection pressure is supported by frac stimulation pressures, in lieu of Step Rate Test results, which indicate a breakdown pressure at about 400#.

The upper primary confining layers between the injection zone and surface are the Jurassic-age Summerville Formation and Morrison Formation shales and siltstones. The lower primary confining layer is the Chinle Formation.

In this area, the sandstones of the Glen Canyon Group are not considered Underground Sources of Drinking Water (USDW; a water source containing less than 10,000 mg/l, total dissolved solids).

There are no subsurface water rights filed within a mile of the Harley Dome #1.

An analysis of the original Cement Bond Log for this well was undertaken to evaluate the quality of the bond over the confining interval in the well. The results of the review indicated that there was insufficient 80% bond index cement bonding above the injection interval. A remedial cement job was undertaken, which resulted in the attainment of more than sufficient intervals of well-bonded cement and the cement quality was subsequently found to be acceptable.

Oil/Gas & Other Mineral Resources Protection:

The nearest conventional oil and gas development is shut-in Morrison Formation gas about 1.5 miles to the west and also to the north northwest and, also, Dakota Sandstone gas production about 2.5 miles northwest.

A review of the well records of the Division of Oil, Gas and Mining revealed that two P&A'd wells, the Lansdale Gov't. 16 (4301930021) and the Lansdale State 14 (4301930016) are within the one-half mile regulatory area of review. Both of these wells fell short of the depth of the proposed injection zone in the subject well.

The BLM notes an Entrada Sandstone natural gas and helium resource in the area. They posted a protest to the project based on perceived possible threats to these resources as well as proximity to the sundry recreational/scenic/environmental resources in abundance in the

Westwater Canyon area of the Colorado River drainage. After consulting with the Operator and additional study of the project and local geology, they withdrew their protest.

Bonding:

Westwater Farms, LLC, has posted a $15.000.00 CD (Wells Fargo Bank, NA) plugging bond # 8429377339 filed with this Division.

Actions Taken and Further Approvals Needed:

Notice of this application was published in the Salt Lake Tribune and the Moab, Utah, Times. In addition, copies of the notice were provided to EPA Region 8, the BLM Moab Field Office, Grand County Planning, SITLA and the operator. The notice stated the proposed interval for injection to be selective zones in the Wingate Sandstone. Any future injection into strata other than that permitted will require administrative approval after appropriate sampling and testing.

The Noticing period for this SWD candidate well attracted two other protests (from the Living Rivers environmental group and a resident from Moab, Utah), besides the BLM protest noted above, as well as a letter from the United States Fish and Wildlife Service federal agency to advise about the existence of piscine Threatened and Endangered faunas found in that area in the Colorado River.

After reviewing their documentary submission and application, it is my conclusion that Westwater Farms, LLC, ought to be granted a permit to utilize the Harley Dome #1 SWD well for injecting field produced water into the proposed strata. The proposed operations would not result in any meaningful diminution in the quality of the noxious formation water. No negative impacts on any superjacent high quality ground water resource are anticipated resultant of the subject permitted operations, nor is it likely that the injectate will attain the exposures of the Wingate Sandstone in Westwater Canyon area, owing to the lateral and vertical distances involved, as well as the details of the local and regional geologic setting.

A properly designed and constructed injection well, combined with periodic mechanical integrity tests (MIT), demonstrably poses no threat to fresh or useable groundwater supplies. On 12/11/08 the operator conducted a successful MIT on this well that was witnessed by Mr. Mark Jones, an inspector from the Division's Price, Utah, office. The Division staff recommends administrative approval of this application.

Note: Applicable technical publications concerning water resources in the general vicinity of this project have been reviewed and taken into consideration during the permit review process.

Reviewer(s): Christopher J. Kierst Date: 10/6/2010